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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.	
09/993,434 11/06/2001		Shiang Sung	4417A (CIP)	8159	
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Engelhard Cor		EXAMINER			
101 Wood Avenue P.O. Box 770			MEDINA SANABRIA, MARIBEL		
Iselin, NJ 0883	3U-U / /U		ART UNIT	PAPER NUMBER	
			1754		

Please find below and/or attached an Office communication concerning this application or proceeding.

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		Application No.		Applicant(s)				
		09/993,434		SUNG, SHIANG				
Office Action Summary		Examiner		Art Unit				
		Maribel Medina		1754				
Period fo	The MAILING DATE of this communication app or Reply	ears on the cover	sh et with the c	orrespondence addres	is			
THE N - Exten after: - If the - If NO - Failur - Any re	ORTENED STATUTORY PERIOD FOR REPL' MAILING DATE OF THIS COMMUNICATION. sions of time may be available under the provisions of 37 CFR 1.1: SIX (6) MONTHS from the mailing date of this communication. period for reply specified above is less than thirty (30) days, a reply period for reply is specified above, the maximum statutory period or re to reply within the set or extended period for reply will, by statute eply received by the Office later than three months after the mailing d patent term adjustment. See 37 CFR 1.704(b).	36(a). In no event, howe y within the statutory min vill apply and will expire , cause the application to	iver, may a reply be tim imum of thirty (30) days SIX (6) MONTHS from b become ABANDONEI	nely filed s will be considered timely. the mailing date of this commu D (35 U.S.C.§ 133).	nication.			
1)🖂	Responsive to communication(s) filed on 161	<u> November 2001</u> .						
2a)□	This action is FINAL . 2b)⊠ Th	is action is non-fi	nal.					
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11, 453 O.G. 213. Disposition of Claims								
4)🖂	Claim(s) 1-83 is/are pending in the application	1.						
,	4a) Of the above claim(s) is/are withdrawn from consideration.							
5)	5) Claim(s) is/are allowed.							
6)⊠	6)⊠ Claim(s) <u>1-83</u> is/are rejected.							
7)	7) Claim(s) is/are objected to.							
8) Claim(s) are subject to restriction and/or election requirement.								
Application Papers								
9) The specification is objected to by the Examiner.								
10)☐ The drawing(s) filed on is/are: a)☐ accepted or b)☐ objected to by the Examiner.								
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).								
11)☐ The proposed drawing correction filed on is: a)☐ approved b)☐ disapproved by the Examiner.								
If approved, corrected drawings are required in reply to this Office action.								
	The oath or declaration is objected to by the Ex	aminer.						
Priority u	nder 35 U.S.C. §§ 119 and 120							
13)□	Acknowledgment is made of a claim for foreign	priority under 35	U.S.C. § 119(a)-(d) or (f).				
a)[☐ All b)☐ Some * c)☐ None of:			,				
	1. Certified copies of the priority documents	s have been rece	ived.					
	2. Certified copies of the priority documents have been received in Application No							
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received. 								
	cknowledgment is made of a claim for domesti				lication).			
a)	The translation of the foreign language pro	visional application	on has been rec	eived.				
Attachment		, , , , , , , , , , , , , , , , , , , ,	. 00	_,,				
2) Notice	e of References Cited (PTO-892) e of Draftsperson's Patent Drawing Review (PTO-948) nation Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u>	4) 5) 6)		(PTO-413) Paper No(s) atent Application (PTO-152				
J.S. Patent and Tra PTO-326 (Rev		tion Summary		Part of Paper No. 5				

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-13, 15, 16, and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,064,803 (Nunan).

Nunan discloses applicants' invention. In regards to claim 1, the catalyst comprises: (a) ceria disposed on a support as crystallites with a size of less than 50Å (5 nm) (See col. 3, lines 45-50); and (b) a catalytic effective amount of a noble metal from Group VIII (see col. 4, lines 44-53) disposed on a refractory metal oxide support (See col. 3, lines 30-40).

In regards to the limitation of claim 1 that reads "said catalyst composition containing substantially no organic compounds nor substantially any zirconia in the form of a composite or a solid solution with said ceria" Nunan does not disclose that the catalyst composition contains organic compounds and does not contain zirconia in the form of a composite or a solid with the ceria.

In regards to claims 2-4, Nunan discloses that the catalyst is washcoated on a carrier such as a honeycomb monolith made of ceramics or metal such (i.e. cordierite) (See col. 3, lines 23-30; and col. 12, lines 16 and 53).

In regards to claims 5-6, Nunan discloses that the ceria has a particle size below 50Å (5 nm).

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In regards to claims 7-8, Nunan discloses a ceria content of up to about 50 wt % (see col. 4, lines 38-41) and in example 11, col. 12, line 33, disclose a content of 21.4 g/L (0.35 g/in³).

In regards to claims 9-11, Nunan discloses palladium as the noble metal and in compositions in the range of about 0.1 to 4 wt % (See col. 4, lines 44-53).

In regards to claims 12-13, Nunan discloses that the refractory metal oxide is active alumina (See col. 3, lines 30-35).

In regards to claims 15, 16, 19, 20 and 21 Nunan discloses the addition of promoters such as lanthanum, and alkaline earths such as barium, strontium and calcium in concentrations in the range of 1-20 wt% (See col. 2, lines 45-52, and col. 5, lines 20-31). No difference is seen between the instantly claimed invention and Nunan.

3. Claims 22-31, 33, 34 and 37-39 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,064,803 (Nunan).

Nunan discloses applicants' invention. In regards to claim 22, the apparatus comprises a catalyst member (See examples 13 and 14) wherein the catalyst comprises: (a) ceria disposed on a support as crystallites with a size of less than 50Å (5 nm) (See col. 3, lines 45-50); and (b) a catalytic effective amount of a noble metal from Group VIII (see col. 4, lines 44-53) disposed on a refractory metal oxide support (See col. 3, lines 30-40).

In regards to the limitation of claim 22 that reads "said catalyst composition containing substantially no organic compounds nor substantially any zirconia in the form of a composite or a solid solution with said ceria" Nunan does not disclose that the catalyst composition contains organic compounds and does not contain zirconia in the form of a composite or a solid with the ceria.

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In regards to claims 23-25, Nunan discloses that the catalyst is washcoated on a carrier such as a honeycomb monolith made of ceramics or metal such (i.e. cordierite) (See col. 3, lines 23-30; and col. 12, lines 16 and 53).

In regards to claims 26-27, Nunan discloses that the ceria has a particle size below 50Å (5 nm).

In regards to claims 28-29, Nunan discloses a ceria content of up to about 50 wt % (see col. 4, lines 38-41) and in example 11, col. 12, line 33, disclose a content of 21.4 g/L (0.35 g/in³).

In regards to claims 30-31, Nunan discloses that the refractory metal oxide is active alumina (See col. 3, lines 30-35).

In regards to claims 33, 34, 37, 38 and 39 Nunan discloses the addition of promoters such as lanthanum, and alkaline earths such as barium, strontium and calcium in concentrations in the range of 1-20 wt% (See col. 2, lines 45-52, and col. 5, lines 20-31). No difference is seen between the instantly claimed invention and Nunan.

4. Claims 53-62, 64, 65, 68-70 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,064,803 (Nunan).

Nunan discloses applicants' invention. In regards to claim 53 Nunan discloses a method or treating a gas comprising hydrocarbons, carbon monoxide and nitrogen oxides which comprises flowing the gas through a catalyst member (See col. 1, lines 5-12 and example 14) comprising: (a) ceria disposed on a support as crystallites with a size of less than 50Å (5 nm) (See col. 3, lines 45-50); and (b) a catalytic effective amount of a noble metal from Group VIII (see col. 4, lines 44-53) disposed on a refractory metal oxide support (See col. 3, lines 30-40).

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In regards to the limitation of claim 53 that reads "said catalyst composition containing substantially no organic compounds nor substantially any zirconia in the form of a composite or a solid solution with said ceria" Nunan does not disclose that the catalyst composition contains organic compounds and does not contain zirconia in the form of a composite or a solid with the ceria.

In regards to claims 54-56, Nunan discloses that the catalyst is washcoated on a carrier such as a honeycomb monolith made of ceramics or metal such (i.e. cordierite) (See col. 3, lines 23-30; and col. 12, lines 16 and 53).

In regards to claims 57-58, Nunan discloses that the ceria has a particle size below 50Å (5 nm).

In regards to claims 59-60, Nunan discloses a ceria content of up to about 50 wt % (see col. 4, lines 38-41) and in example 11, col. 12, line 33, disclose a content of 21.4 g/L (0.35 g/in³).

In regards to claims 61-62, Nunan discloses that the refractory metal oxide is active alumina (See col. 3, lines 30-35).

In regards to claims 64, 65, 68, 69 and 70 Nunan discloses the addition of promoters such as lanthanum, and alkaline earths such as barium, strontium and calcium in concentrations in the range of 1-20 wt% (See col. 2, lines 45-52, and col. 5, lines 20-31). No difference is seen between the instantly claimed invention and Nunan.

5. Claims 1-21 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,260,249 (Shiraishi et al).

Shiraishi et al disclose applicants' catalyst composition. In regards to claim 1 Shiraishi et al disclose a catalyst composition comprising: (a) cerium oxide (ceria) crystals of not more than

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250 Å (25 nm) in diameter (See col. 4, lines 44-51); and (b) a noble metal (palladium) in a refractory metal oxide support (See col. 2, lines 56-61).

In regards to the limitation of claim 1 that reads "said catalyst composition containing substantially no organic compounds nor substantially any zirconia in the form of a composite or a solid solution with said ceria" Shiraishi et al do not disclose that the catalyst composition contains organic compounds and examples control 1-2; 1-3; 3-2; 3-3; 3-6; 4-3; 4-6; and claim 14 do not contain zirconia in the form of a composite or a solid with the ceria. Note, that claim 14 does not require that the zirconia and ceria are present in the form of a composite or solid solution as claims 1 and 2 require, therefore claim 14 of Shiraishi et al meet the limitation of claim 1 cited above.

In regards to claims 2-4, Shiraishi et al disclose that the catalyst is washcoated on a carrier such as a honeycomb monolith made of ceramics or metal (i.e. cordierite) (See col. 8, lines 15-36).

In regards to claims 5-6, Shiraishi et al disclose that the ceria has a particle size below 250Å (25 nm) (See col. 4, lines 44-48). In table # 4 Shiraishi et al show values such as 135 Å (13.5 nm) and 140 Å (14 nm).

In regards to claims 7-8, Shiraishi et al disclose a ceria content in the range from 10 to 150 g per liter of the catalyst (0.16 to 2.45 g/in³) (See col.3, lines 38-45, and claims 1, 2 and 14).

In regards to claims 9-11, Shiraishi et al disclose palladium as the noble metal in an amount in the range from 0.5 to 30 g per liter of the catalyst (14.16 to 849 g/ft³) (See col. 2, lines 56-60 and claims 1, 2 and 14).

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In regards to claims 12-13, Shiraishi et al disclose that the refractory metal oxide is active alumina in an amount in the range from 10 to 300 g per liter of the catalyst (0.82 to 4.9 g/in³) (See col. 5, lines 18-27).

In regards to claims 15-16, Shiraishi et al disclose a lanthanum component in an amount ranging from 0.1 to 50 g per liter of the catalyst (0.001639 to 0.8195 g/in³) (See col. 5, lines 27-46).

In regards to claims 17-18, Shiraishi et al disclose a zirconium component in an amount ranging from 0.1 to 50 g per liter of the catalyst (0.001639 to 0.8195 g/in³) (See col. 52, claim 14). Note that claim 14 does not require a composite or solid solution of zirconium with ceria.

In regards to claims 19-21, Shiraishi et al disclose an alkaline earth metal such as beryllium, magnesium, calcium, strontium, and barium in amounts in the range from 0.1 to 50 g per liter of the catalyst (0.001639 to 0.8195 g/in³) (See col. 3, lines 3-10).

No difference is seen between the instantly claimed invention and Shiraishi et al catalyst composition.

6. Claims 22-42 and 49-52 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,260,249 (Shiraishi et al).

In regards to claim 1 Shiraishi et al disclose an apparatus comprising a catalyst member comprising: (a) cerium oxide (ceria) crystals of not more than 250 Å (25 nm) in diameter (See col. 4, lines 44-51); and (b) a noble metal (palladium) in a refractory metal oxide support (See col. 2, lines 56-61).

In regards to the limitation of claim 22 that reads "said catalyst composition containing substantially no organic compounds nor substantially any zirconia in the form of a composite or

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a solid solution with said ceria" Shiraishi et al do not disclose that the catalyst composition contains organic compounds and examples control 1-2; 1-3; 3-2; 3-3; 3-6; 4-3; 4-6; and claim 14 do not contain zirconia in the form of a composite or a solid with the ceria. Note, that claim 14 does not require that the zirconia and ceria are present in the form of a composite or solid solution as claims 1 and 2 require, therefore claim 14 of Shiraishi et al meet the limitation of claim 1 cited above.

In regards to claims 23-25, Shiraishi et al disclose that the catalyst is washcoated on a carrier such as a honeycomb monolith made of ceramics or metal (i.e. cordierite) (See col. 8, lines 15-36).

In regards to claims 26-27, Shiraishi et al disclose that the ceria has a particle size below 250Å (25 nm) (See col. 4, lines 44-48). In table # 4 Shiraishi et al show values such as 135 Å (13.5 nm) and 140 Å (14 nm).

In regards to claims 28-29, Shiraishi et al disclose a ceria content in the range from 10 to 150 g per liter of the catalyst (0.16 to 2.45 g/in^3) (See col.3, lines 38-45, and claims 1, 2 and 14).

In regards to claims 30-32, Shiraishi et al disclose that the refractory metal oxide is active alumina in an amount in the range from 10 to 300 g per liter of the catalyst (0.82 to 4.9 g/in³) (See col. 5, lines 18-27).

In regards to claims 33-34, Shiraishi et al disclose a lanthanum component in an amount ranging from 0.1 to 50 g per liter of the catalyst (0.001639 to 0.8195 g/in³) (See col. 5, lines 27-46).

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In regards to claims 35-37, Shiraishi et al disclose a zirconium component in an amount ranging from 0.1 to 50 g per liter of the catalyst (0.001639 to 0.8195 g/in³) (See col. 52, claim 14). Note that claim 14 does not require a composite or solid solution of zirconium with ceria.

In regards to claims 37-39, Shiraishi et al disclose an alkaline earth metal such as beryllium, magnesium, calcium, strontium, and barium in amounts in the range from 0.1 to 50 g per liter of the catalyst (0.001639 to 0.8195 g/in³) (See col. 3, lines 3-10).

In regards to claims 40-42 Shiraishi et al disclose in col. 8, lines 44-55 that the catalyst disclosed is inserted in a converter and used for purifying the exhaust gas from and internal combustion engine such as an automobile containing noxious components such as carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx). Regarding the limitation of claim 40 that reads, "the catalyst member is present in a closed-coupled or medium-coupled mode" Shiraishi et al catalyst is located at the inlet of the exhaust gas (See col. 8, lines 44-55) which meets the definition of a closed or medium- coupled mode as being near the outlet of the exhaust manifold of an engine. Shiraishi et al disclose palladium as the noble metal in an amount in the range from 0.5 to 30 g per liter of the catalyst (14.16 to 849 g/ft³) (See col. 2, lines 56-60 and claims 1, 2 and 14).

In regards to claims 49-52 Shiraishi et al disclose a second catalyst member downstream from the instantly claimed catalyst member containing a monolithic carrier, a mixture comprising a catalytically active component (a) rhodium an platinum or (b) rhodium, platinum, and palladium and a refractory inorganic oxide is used in the same catalyst system as a catalyst in the exhaust gas outlet side (See col. 8, lines 44-55) the second catalyst member also comprises an oxygen storage component such as ceria (See col. 42, lines 29-46).

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No difference is seen between the instantly claimed invention and Shiraishi et al disclosure.

7. Claims 53-73 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,260,249 (Shiraishi et al).

In regards to claim 53 Shiraishi et al disclose a method for treating a gas comprising hydrocarbons, carbon monoxide and nitrogen oxides by flowing the gas through a catalyst member comprising: (a) cerium oxide (ceria) crystals of not more than 250 Å (25 nm) in diameter (See col. 4, lines 44-51); and (b) a noble metal (palladium) in a refractory metal oxide support (See col. 2, lines 56-61).

In regards to the limitation of claim 52 that reads "said catalyst composition containing substantially no organic compounds nor substantially any zirconia in the form of a composite or a solid solution with said ceria" Shiraishi et al do not disclose that the catalyst composition contains organic compounds and examples control 1-2; 1-3; 3-2; 3-3; 3-6; 4-3; 4-6; and claim 14 do not contain zirconia in the form of a composite or a solid with the ceria. Note, that claim 14 does not require that the zirconia and ceria are present in the form of a composite or solid solution as claims 1 and 2 require, therefore claim 14 of Shiraishi et al meet the limitation of claim 1 cited above.

In regards to claims 54-56, Shiraishi et al disclose that the catalyst is washcoated on a carrier such as honeycomb monolith made of ceramics or metal (i.e. cordierite) (See col. 8, lines 15-36).

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In regards to claims 57-58, Shiraishi et al disclose that the ceria has a particle size below 250Å (25 nm) (See col. 4, lines 44-48). In table # 4 Shiraishi et al show values such as 135 Å (13.5 nm) and 140 Å (14 nm).

In regards to claims 59-60, Shiraishi et al disclose a ceria content in the range from 10 to 150 g per liter of the catalyst (0.16 to 2.45 g/in³) (See col.3, lines 38-45, and claims 1, 2 and 14).

In regards to claims 61-63, Shiraishi et al disclose that the refractory metal oxide is active alumina in an amount in the range from 10 to 300 g per liter of the catalyst (0.82 to 4.9 g/in³) (See col. 5, lines 18-27).

In regards to claims 64-65, Shiraishi et al disclose a lanthanum component in an amount ranging from 0.1 to 50 g per liter of the catalyst (0.001639 to 0.8195 g/in³) (See col. 5, lines 27-46).

In regards to claims 66-67, Shiraishi et al disclose a zirconium component in an amount ranging from 0.1 to 50 g per liter of the catalyst (0.001639 to 0.8195 g/in³) (See col. 52, claim 14). Note that claim 14 does not require a composite or solid solution of zirconium with ceria.

In regards to claims 68-70, Shiraishi et al disclose an alkaline earth metal such as beryllium, magnesium, calcium, strontium, and barium in amounts in the range from 0.1 to 50 g per liter of the catalyst (0.001639 to 0.8195 g/in³) (See col. 3, lines 3-10).

In regards to claims 71-73 Shiraishi et al disclose in col. 8, lines 44-55 that the catalyst disclosed is inserted in a converter and used for purifying the exhaust gas from and internal combustion engine such as an automobile containing noxious components such as carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx). Regarding the limitation of claim 71 that reads, "the catalyst member is present in a closed-coupled or medium-coupled

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mode" Shiraishi et al catalyst is located at the inlet of the exhaust gas (See col. 8, lines 44-55) which meets the definition of a closed or medium- coupled mode as being near the outlet of the exhaust manifold of an engine. Shiraishi et al disclose palladium as the noble metal in an amount in the range from 0.5 to 30 g per liter of the catalyst (14.16 to 849 g/ft³) (See col. 2, lines 56-60 and claims 1, 2 and 14).

No difference is seen between the instantly claimed invention and Shiraishi et al disclosure.

Claim Rejections - 35 USC § 103

- 8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 9. Claims 43-48 and 74-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi et al as applied to claims 22-42 and 49-73 above, and further in view of US Patent No. 4,367,162 (Fujitani et al).

Shiraishi et al apply herein as above.

In regards to claim 43, 45, 74, and 76, Shiraishi et al fail to disclose the shape of the catalyst compositions.

Fujitani et al is relied upon to teach catalyst composition for reducing nitrogen oxides, carbon monoxide and hydrocarbons in exhaust gases from internal combustion engines, wherein the catalyst composition is carried in a honeycomb monolith carrier in the shape of pellets.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to have used any shape of the carrier of Shiraishi et al such as the pellet shape as

taught by Fujitani et al, since Fujitani et al disclose that this is a well known shape for catalyst

compositions used in the treatment of exhaust gases from internal combustion engines and since

Shiraishi et al disclose that any known monolith structure can be used in his process (see col. 9,

lines 19-35).

Alternatively, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to have selected any shape for the instantly claimed catalyst such as brick or

pellet in the process of Shiraishi et al, since it has been held that the configuration or shape of a

claimed invention is a matter of choice which a person of ordinary skill in the art would have

found obvious, absent persuasive evidence that the particular configuration of the claimed

invention is "significant" (See In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

In regards to claims 44, 46-48, 75, and 77-83 Shiraishi et al disclose a second catalyst

member downstream from the instantly claimed catalyst member containing a monolithic carrier,

a mixture comprising a catalytically active component (a) rhodium an platinum or (b) rhodium,

platinum, and palladium and a refractory inorganic oxide is used in the same catalyst system as a

catalyst in the exhaust gas outlet side (See col. 8, lines 44-55) the second catalyst member also

comprises an oxygen storage component such as ceria (See col. 42, lines 29-46). Also, it is

disclosed in col. 9, lines 43-50 that a plurality of containers may be used.

Conclusion

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10. Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Maribel Medina whose telephone number is (703) 305-1928.

The examiner can normally be reached on Monday through Friday from 7:30 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (703) 308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Watel Medina Maribel Medina Examiner Art Unit 1754

MM July 22, 2003